Set	Items	Description
S1	2154812	STATE? ? OR STATUS OR CONDITION? ?
S2	237869	S1(5N)(COMPUTER? ? OR PROCESS?R? ? OR MICROCOMPUT? OR MICROPROCESS? OR SLAVE? ? OR NODE? ? OR THREAD? ? OR DEVICE? ? OR UNIT OR UNITS OR STATION? ? OR TERMINAL? ? OR CLIENT? ? OR LINK? ?)
S3	93870	SCHEDUL???
S4	6529	S3(5N)(MASTER? ? OR CONTROLLER? ? OR CONTROLER? ? OR COORDINAT?R? ? OR CO()ORDINAT?R? ? OR SERVER? ? OR BROKER? ? OR HUB OR ADMINISTRATOR? ?)
S5	10560	SCHEDULER? ?
S6	25685	(PRINCIPAL OR LEADER OR LEAD OR CHIEF OR ALPHA OR PARENT OR PRIMARY OR MAIN OR CENTRAL)(1W)(COMPUTER? ? OR PROCESS?R? ? OR MICROCOMPUT? OR MICROPROCESS?)
S7	209	S3(5N)S6
S8	78812	UPLOAD? OR DOWNLOAD? OR (UP OR DOWN)()LOAD???
S9	2171300	DELIVER? OR DISTRIBUT? OR PROVIDE OR PROVIDES OR PROVIDED OR PROVIDING OR PROVISION? ?
S10	246202	IMPORT? ? OR IMPORTED OR IMPORTING OR IMPORTATION? OR ACQUISITION? ? OR ACQUIR???
S11	1524434	TRANSFER??? OR TRANSFERR??? OR SEND??? OR SENT OR TRANSMISSION? ? OR TRANSMIT? OR RETRIEV???
S12	886434	S8:S11(5N)(DATA OR OBJECT? ? OR CONTENT? ? OR AUDIODATA OR VIDEODATA OR IMAGEDATA OR MEDIADATA OR TEXTDATA OR MEDIA OR MULTIMEDIA OR VIDEO? ?)
S13	64710	S8:S11(5N)(FILE? ? OR DATAFILE? ? OR COMPUTERFILE? OR AUDIOFILE? OR VIDEOFILE? OR IMAGEFILE? OR MEDIAFILE? OR TEXTFILE? OR MUSICFILE?)
S14	122280	BETWEEN(1W)(SLAVE? ? OR NODE? ? OR THREAD? ? OR DEVICE? ? OR UNIT OR UNITS OR STATION? ? OR TERMINAL? ? OR CLIENT? ? OR LINK? ?)
S15	377045	(ANOTHER OR DIFFERENT OR SECOND? OR 2ND OR THIRD OR 3RD OR OTHER)(1W)(SLAVE? ? OR NODE? ? OR THREAD? ? OR DEVICE? ? OR UNIT OR UNITS OR STATION? ? OR TERMINAL? ? OR CLIENT? ? OR LINK? ?)
S16	1278238	REDIRECT? OR RE()DIRECT??? OR REFER?? OR REFERING OR REFERRING OR REFERRED
S17	33763	S16(5N)(S5:S6 OR MASTER? ? OR CONTROLLER? ? OR CONTROLER? ? OR COORDINAT?R? ? OR CO()ORDINAT?R? ? OR SERVER? ? OR BROKER? ? OR HUB OR ADMINISTRATOR? ?)
S18	1289	S2(100N)S17
S19	10574	S3(10N)S12:S13
S20	8	S18(100N)S19
S21	5	S18(100N)(S3(10N)S14:S15)
S22	818	S2(100N)S19
S23	141	S22(100N)S14:S15
S24	41	S23(100N)(S4:S5 OR S7)
S25	49	S20:S21 OR S24
S26	22	S25 AND PY=1963:2003
S27	23	S25 AND (AC=US OR AC=US/PR) AND AY=1963:2003
S28	27	S26:S27

? t 28/5,k/10-11,23-24,26

28/5,K/10   (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

01142177   **Image available**

SEMI-DISTRIBUTED SCHEDULING SCHEME FOR THE REVERSE LINK OF WIRELESS SYSTEMS
MECANISME D'ORDONNANCEMENT SEMI-REPARTI POUR LA LIAISON RETOUR DE SYSTEMES
SANS FIL

English Abstract
In wireless communications systems, the Base Station Controller (BSC)
(241) and Base Transceiver Stations (BTSs) (211, 213) have schedulers
(243, 215) which schedule soft handoff (SHO) users (221) and non-soft
handoff (NSHO) users (223, 225) regardless of delay sensitive users. The
BSC's scheduler (243) prioritizes the SHO users (221) and calculates the
available capacity at each sector. Then, with assigned data rates
according to the priority, the available capacity is updated by the BSC's
scheduler (243). The BTS's scheduler (215) calculates the available
capacity at the sector and with assigned data rates according to the
priority of the NSHO users (223, 225), the available capacity is updated.
Based on the updated available capacity packet data is transmitted at the
scheduled data rate in the reverse link. With the schedules processed
separately by the BSC (241) and BTS (213), the multi-user diversity of
states on the reverse link of wireless communications is efficiently
supported.

French Abstract
Dans les systemes de communications sans fil, le controleur de station de
base (BSC) (241) et les stations d'emission et de reception de base (BTS)
(211,213) comprennent des ordonnanceurs (243,215) qui planifient les
utilisateurs (221) a transfert sans coupure (SHO) et les utilisateurs
(223,225)a transfert avec coupure (NSHO) independamment des utilisateurs
sensibles au retard. L'ordonnanceur (243) du BSC donne priorite aux

utilisateurs SHO (221) et il calcule la capacite disponible dans chaque
secteur. Ensuite, avec les debits de donnees affectes selon la priorite,
la capacite disponible est actualisee par l'ordonnanceur (243) du BSC.
L'ordonnanceur (215) du BTS calcule la capacite disponible dans le
secteur et avec les debits de donnees affectes, selon la priorite des
utilisateurs NSHO (223,225), la capacite disponible est actualisee. Sur
la base de la capacite disponible actualisee, les donnees en paquet sont
transmises selon les debits de donnees planifies dans la liaison retour.
Avec les ordonnancements traites separement par les BSC (241) et BTS
(213), la diversite multi-utilisateur d'etats sur la liaison retour de
communications sans fil est prise en charge efficacement.

Legal Status (Type, Date, Text)
Publication   20040729 A1 With international search report.
Publication   20040729 A1 Before the expiration of the time limit for
                         amending the claims and to be republished in the
                         event of the receipt of amendments.
Claim Mod   20041007 Later publication of amended claims under Article 19
                         received: 20040820
Republication 20041007 A1 With international search report.
Republication 20041007 A1 With amended claims and statement.
Fulltext Availability:
  Detailed Description

Detailed Description
... rate control algorithm has the same problem in allocating resources to
 SHO users as distributed **scheduling** .

  [0014] SUMMARY OF THE INVENTION
  [0015] It is an **object** of the present invention to **provide** an
 improved **scheduler** for properly **scheduling data transmissions** and
 efficiently supporting the multi-user diversity of **states** on the
 reverse **link** of packet-based wireless communications.

  [0016] According to one aspect of the present invention, there is
 provided a **scheduler** for scheduling calls in wireless communications
 system comprising: a Base Station Controller for controlling various...

 ...aspects of the system, and at least one Base Transceiver Station for
 providing communication links **between** mobile **stations** and between the
 mobile stations and a wireline telephone network, the mobile stations
 being associated with multi-diversity of user states, the **scheduler**
 scheduling the calls in reverse communication links based on the
 parameters of the system

  [0017] In the **scheduler** , scheduling functions are distributed to the
 Base Station Controller and the Base Transceiver Station in...

 ...the mobile. station states.

  [0018] For example, the scheduling function performed by the Base Station
  Controller schedules calls of the mobile stations associated with
 soft handoff (SHO) state and the scheduling function...

 28/5,K/11   (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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01028864   **Image available**
METHOD AND APPARATUS FOR A MIMO-OFDM COMMUNICATION SYSTEM
ATTRIBUTION DE RESSOURCES POUR SYSTEMES DE COMMUNICATION MIMO-OFDM
Patent Applicant/Assignee:
  QUALCOMM INCORPORATED, 5775 Morehouse Drive, San Diego, CA 92121, US, US

(Residence), US (Nationality)
Inventor(s):
  WALTON Jay Rod, 7 Ledgewood Drive, Westford, MA 01886, US,
  KETCHUM John W, 37 Candleberry Lane, Harvard, MA 01451, US,
  WALLACE Mark, 4 Madel Lane, Bedford, MA 01730, US,
  MEDVEDEV Irina, 68 Liberty Avenue, #2, Somerville, MA 02114, US,
Legal Representative:
  WADSWORTH Philip R (et al) (agent), QUALCOMM Incorporated, 5775 Morehouse
    Drive, San Diego, CA 92121, US,

English Abstract

    Techniques to assign terminals for data transmission in a MIMO-OFDM
    system A scheduler forms sets of terminals, called a hypothesis, for
    data transmission for each of a number of frequency bands. One or more
    sub-hypotheses may be further formed for each hypothesis, with each
    sub-hypothesis corresponding to (1) specific assignments of transmit
    antennas to the terminal(s) in the hypothesis, or, (2) a specific order
    for processing the uplink data transmissions from the terminal(s). The
    performance of each sub-hypothesis is then evaluated. One sub-hypothesis
    is then selected for each frequency band based on the evaluated
    performance, and, the set of terminals in each selected sub-hypothesis
    are then scheduled for data transmission on the corresponding frequency
    band.

French Abstract

    L'invention porte sur des techniques de programmation de terminaux pour
    la transmission de donnees sur la liaison descendante et/ou montante d'un
    systeme MIMO-OFDM en fonction des "signatures" spatiales et ou de
    frequence des terminaux. Un programmateur forme un ou plusieurs ensembles
    de terminaux pour une eventuelle transmission de donnees (liaison
    descendante ou montante) pour chaque bande d'un nombre de bandes de
    frequence. Une ou plusieurs sous-hypotheses peuvent egalement etre
    etablies pour chaque hypothese, chaque sous-hypothese correspondant a (1)
    des affectations specifiques d'antennes de transmission aux terminaux de
    l'hypothese (pour la liaison descendante) ou (2) un ordre specifique pour
    le traitement des transmissions de donnees par liaison montante depuis le
    ou les terminaux (pour la liaison montante). La performance de chaque
    sous-hypothese est ensuite evaluee (par exemple, sur la base d'une ou
    plusieurs mesures de performance). Une sous-hypothese est ensuite
    selectionnee pour chaque bande de frequence sur la base de la performance

evaluee, et le ou les terminaux de chaque sous-hypothese evaluee sont
ensuite programmes pour la transmission de donnees sur la bande de
frequence correspondante.

Legal Status (Type, Date, Text)
Publication   20030717 A1 With international search report.
Publication   20030717 A1 Before the expiration of the time limit for
                            amending the claims and to be republished in the
                            event of the receipt of amendments.
Correction   20031113 Corrected version of Pamphlet front pages: under
                            (54) published title replaced by correct title under
                            (57) published abstract replaced by correct abstract
Republication 20031113 A1 With international search report.
Examination   20031211 Request for preliminary examination prior to end of
                            19th month from priority date

Patent and Priority Information (Country, Number, Date):
  Patent: ... **20030717**
Fulltext Availability:
  Detailed Description
Publication Year: **2003**

Detailed Description
...   resources in a MIMO-OFDM system to provide high system performance.

     SUMMARY
     [10091 Techniques are **provided** herein to **schedule** terminals for **data**
      transmission on the downlink and/or uplink based on the spatial and/or
     frequency "signatures" of...

...an upcoming time interval may be associated with transmission channels
     having different capabilities due to **different   link   conditions**
     experienced by the **terminal** . Various scheduling schemes are provided
     herein to select a "proper" set of one or more...

...that system goals (e.g., high throughput, fairness, and so on) are
     achieved.

     [1010] A **scheduler** may be designed to form one or more sets of
     terminals for possible (downlink or...

 28/5,K/23   (Item 15 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00568263   **Image available**
DISTRIBUTED MONITOR CONCURRENCY CONTROL
COMMANDE DE LA CONCURRENCE DE MONITEURS REPARTIS
Patent Applicant/Assignee:
  SUN MICROSYSTEMS INC,
Inventor(s):
  HADDON Bruce Kenneth,
  CONNOR William Hayden,
Patent and Priority Information (Country, Number, Date):
  Patent: WO 200031636 A1 **20000602** (WO 0031636)
  Application: WO 99US27854 19991123 (PCT/WO US9927854)
  Priority Application: US 98198477 19981124
Designated States:
(Protection type is "patent" unless otherwise stated - for applications
prior to 2004)
  AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB
  GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA
  MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA

UG UZ VN YU ZA ZW GH GM KE LS MW SD SL SZ TZ UG ZW AM AZ BY KG KZ MD RU
TJ TM AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG
CI CM GA GN GW ML MR NE SN TD TG
Main International Patent Class (v7): G06F-009/46
Publication Language: English
Fulltext Availability:
  Detailed Description
  Claims
Fulltext Word Count: 5368

English Abstract
  A system and method is disclosed for synchronizing threads of execution
within a distributed computing environment. Threads of execution within a
computer spawn additional threads of execution on separate computers
within the distributed computing environment. Each thread may compete for
shared resources within the computing environment, thereby creating a
need to avoid deadlocks among the local threads. Whereas locals thread
exists within a single computing platform, logical threads are created to
relate local threads to each other and thereby span the platforms on
which the local threads reside. Distributed monitors are created to
control access to shared resources by local threads based on logical
thread affiliations. Locks within the distributed monitors are assigned
to logical threads instead of local threads. Local threads that are each
part of the same logical thread will all have access to the shared
resource when the lock is assigned to the logical thread.

French Abstract
  Cette invention se rapporte a un systeme et a un procede servant a
synchroniser les unites d'execution dans un environnement informatique
reparti. Les unites d'execution d'un ordinateur engendrent des unites
d'execution additionnelles dans des ordinateurs separes de
l'environnement informatique reparti. Chaque unite d'execution peut
convoiter les ressources partagees de l'environnement informatique,
creant ainsi la necessite d'eviter les verrouillages cul-de-sac parmi les
unites d'execution locales. Alors que les unites d'execution locales sont
presentes dans une plate-forme informatique unique, les unites
d'execution logiques sont creees pour mettre en relation les unites
d'execution locales entre elles et pour couvrir ainsi les plates-formes
sur lesquelles resident les unites d'execution locales. Des moniteurs
repartis sont crees pour commander l'acces aux ressources partagees par
les unites d'execution locales sur la base des affiliations des unites
d'execution logiques. Des verrouillages a l'interieur des moniteurs
repartis sont attribues aux unites d'execution logiques plutot qu'aux
unites d'execution locales. Les unites d'execution locales qui font
chacune partie de la meme unite d'execution logique ont toutes acces aux
ressources partagees, lorsque le verrouillage est attribue a l'unite
d'execution logique.
Patent and Priority Information (Country, Number, Date):
  Patent: ... **20000602**
Fulltext Availability:
  Detailed Description
Publication Year: **2000**

Detailed Description
... to the locks.

  U.S. Patent 5,524,247 discloses a system for scheduling programming
  units to a resource based on **status** variables indicating a lock or
  lock-wait **state**. The central processing **unit** (CPU) sets a
  predetermined value in the **status** variable corresponding to a **thread**
  when the thread starts waiting for a resource which it shares with **other**
  threads. The **scheduler** **refers** to the **status** variable, selects,
  with priority, a **thread** other than the thread waiting for the shared
  resource, and allocates the CPU to the...

00445871   **Image available**
**PROCESS   CONTROL   SYSTEM   USING   A   LAYERED-HIERARCHY   CONTROL   STRATEGY
    DISTRIBUTED INTO MULTIPLE CONTROL DEVICES**
**SYSTEME   DE   GESTION   DE   PROCESSUS   INDUSTRIELS UTILISANT UNE STRATEGIE DE
    GESTION   A   HIERARCHIE   EN   COUCHES   REPARTIE   DANS   DES   DISPOSITIFS DE
    COMMANDE MULTIPLES**
Patent Applicant/Assignee:
  FISHER-ROSEMOUNT SYSTEMS INC,
Inventor(s):
  NIXON Mark,
  HAVEKOST Robert B,
  JUNDT Larry O,
  STEVENSON Dennis,
  OTT Michael G,
  WEBB Arthur,
  LUCAS Mike,
  HOFFMASTER James,
  OTTENBACHER Ron,
  BEOUGHTER Ken J,
  FALTESEK Roy,
  KRIVOSHEIN Ken D,
  SHEPARD John R,
  CHRISTENSEN Dan D,
  SCHLEISS Duncan,
Patent and Priority Information (Country, Number, Date):
  Patent: WO 9836335 A2 **19980820**
  Application: WO 98US1573 19980206   (PCT/WO US9801573)
  Priority Application: US 97799966 19970214
Designated States:
(Protection type is "patent" unless otherwise stated - for applications
prior to 2004)
  AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM
  GW HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX
  NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW GH GM
  KE LS MW SD SZ UG ZW AM AZ BY KG KZ MD RU TJ TM AT BE CH DE DK ES FI FR
  GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN ML MR NE SN TD TG
Main International Patent Class (v7): G05B-019/418
Publication Language: English
Fulltext Availability:
  Detailed Description
  Claims
Fulltext Word Count: 49539
English Abstract
  A process controller (100) implements smart field device standards (132)
and other bus-based architecture standards so that communications and
control among devices are performed and the standard control operations
are transparent to a user. The process controller implements and executes
a standard set of function blocks (522) or control functions defined by a
standard protocol so that standard-type control is achieved with respect
to non-standard-type devices (12). The process controller enables
standard devices (6) to implement the standard set of function blocks and
control functions. The process controller implements an overall strategy
as if all connected devices are standard devices by usage of a Fieldbus
function block as a fundamental building block for control structures.
Function blocks are defined to create control structures for all types of
devices. A user defines the control strategy by building a plurality of
function blocks and control modules (440) and downloading or installing
user-specified portions of the control strategy into the Fieldbus devices

and the non-Fieldbus devices. Thereafter, the Fieldbus devices
automatically perform the downloaded portions of the overall strategy
independently of other portions of the control stategy. The process
control system includes a diagnostic monitoring and display functionality
for viewing, in a coherent manner, diagnostic information relating to a
process that operates over multiple devices and system components. The
digital control system automatically senses when a new controller is
attached to a network and determines the number and types of I/O Ports
that are attached to the new controller. The digital control system
program also includes an automatic configuration program that responds to
sensing of a new controller by automatically configuring the input/output
(I/O) subsystem Upon connection of the device, the device is
automatically sensed and configured using the database configuration
information, without setting of physical switches or node address
information on the devices. The digital control system with a
predetermined configuration automatically senses the connection to a
network of a digital device that is not included in the predetermined
configuration. The process control system includes a user interface (300)
which supports multiple IEC-1131 standard control languages and
user-selection from among the control languages. From a single
application routing, a user selects a control language from among a
plurality of control languages including, for example, Function Blocks,
Sequential Function Charts, Ladder Logic and Structural Text, to
implement a control strategy. The process control system includes an
alarm and event monitoring and display system for which various users of
the system can easily prioritize the alarm and event information that is
displayed.

French Abstract

Un controleur (100) de processus industriels met en oeuvre des normes
(132) de dispositifs de terrain intelligents ainsi que d'autres normes
d'architecture basees sur des bus de maniere que les transmissions et la
gestion parmi les dispositifs soient executees et que les operations de
gestion classique soient transparentes pour l'utilisateur. Le controleur
de processus industriels met en oeuvre et execute un ensemble classique
de blocs de fonctions (522) ou de fonctions de gestion definies par un
protocole normalise de maniere qu'une gestion de type normalisee soit
obtenue sur des dispositifs (12) de type non normalise. Le controleur de
processus industriels permet a des dispositifs classiques (6) de mettre
en oeuvre l'ensemble normalise de blocs de fonctions et des fonctions de
gestion. Le controleur de processus industriels met en oeuvre une
strategie d'ensemble comme si tous les dispositifs connectes etaient des
dispositifs normalises, par l'utilisation d'un bloc de fonctions Fieldbus
(bus terrain) en tant que bloc de construction fondamental de structures
de gestion. Des blocs de fonctions sont definis pour creer des structures
de gestion pour tous les types de dispositifs. Un utilisateur definit la
strategie de gestion en construisant une pluralite de blocs de fonctions
et de modules de gestion (440) et en telechargeant ou en installant des
parties specifiques a l'utilisateur de la strategie de gestion dont les
dispositifs Fieldbus et les autres dispositifs. Ensuite, les dispositifs
Fieldbus executent automatiquement les parties telechargees de la
strategie d'ensemble, independamment d'autres parties de la strategie de
gestion. Le systeme de gestion de processus industriels comprend une
fonctionnalite de controle diagnostique et d'affichage permettant de
visualiser, de maniere coherente, des informations de diagnostics
relatives a un processus execute sur des dispositifs et des composants
systeme multiples. Le systeme de gestion numerique detecte
automatiquement le moment ou un nouveau controleur est rattache a un
reseau et determine le nombre et les types de ports E/S rattaches au
nouveau controleur. Le programme du systeme de gestion numerique comprend
egalement un programme de configuration automatique reagissant a la
detection d'un nouveau controleur par configuration automatique du
sous-systeme d'entree/sortie E/S. Lors de la connexion du dispositif,
ledit dispositif est detecte et configure automatiquement au moyen des
informations de configuration de la base de donnees, sans etablir de

commutateurs physiques ou d'informations d'adresses nodales sur les
dispositifs. Le systeme de gestion numerique presentant une configuration
predeterminee detecte automatiquement la connexion a un reseau d'un
dispositif numerique non inclus dans la configuration predeterminee. Le
systeme de gestion de processus industriels comprend une interface
utilisateur (300) pouvant recevoir des langages de gestion normalises
IEC-1131 multiples et une selection utilisateur parmi les langages de
gestion. A partir d'un sous-programme d'application individuelle, un
utilisateur selectionne un langage de gestion parmi une pluralite de
langages de gestion comprenant, par exemple, des blocs de fonctions, des
grap(inverted question mark)E

Patent and Priority Information (Country, Number, Date):
  Patent: ... **19980820**
Fulltext Availability:
  Detailed Description
Publication Year: **1998**

Detailed Description
... a device address that is a standby address or an assigned address. In
   either unrecognized **state** 2904, the physical device tag is read from
   the device and displayable on the screen...

...from the device and displayable on the screen.

   In the standbv state 2906, the field **device** is not yet autosensed and
   is therefore not available for configuration in the control strategy...

...included in Link-Active-Scheduler (LAS) schedules of the system
   management configuration. In the standby **state** 2906, finiction. block
   execution and **link** communications are disabled. Note that a
   Link-Active-Scheduler is a deterministic centralized bus **scheduler** that
   includes a list of **transmit** times for all **data** buffers in all devices
   that are to be cyclically transmitted. When a device is due to **send** a
   data buffer, the Link-Active- **Scheduler** issues a compel data (CD)
   message to the device. Upon receipt of the CD message...

...Any device that is configured to receive the data is defined to be a
   "subscriber". **Scheduled data transfers** are typically used for the
   regular, cyclic **transfer** of control loop **data** between devices on the
   fieldbus.

   In the standby state 2906, the system management **state** is
   SM-OPERATIONAL, the physical **device** tag is equal to the device
   identification, and the device address is a standby address...

 28/5,K/26   (Item 18 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00291246   **Image available**
METHOD AND APPARATUS FOR PARALLEL PROCESSING IN A DATABASE SYSTEM
PROCEDE ET APPAREIL DE TRAITEMENT EN PARALLELE DANS UN SYSTEME DE BASE DE
    DONNEES
Patent Applicant/Assignee:
  ORACLE CORPORATION,
Inventor(s):
  HALLMARK Gary,
  LEARY Daniel,
Patent and Priority Information (Country, Number, Date):
  Patent: WO 9509395 A1 **19950406**
  Application: WO 94US10092 19940909 (PCT/WO US9410092)
  Priority Application: US 93585 19930927

Designated States:
(Protection type is "patent" unless otherwise stated - for applications
prior to 2004)
    AM AT AU BB BG BR BY CA CH CN CZ DE DK ES FI GB GE HU JP KE KG KP KR KZ
    LK LR LT LU LV MD MG MN MW NL NO NZ PL PT RO RU SD SE SI SK TJ TT UA UZ
    VN KE MW SD AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE BF BJ CF CG
    CI CM GA GN ML MR NE SN TD TG
Main International Patent Class (v7): G06F-009/45
Publication Language: English
Fulltext Availability:
    Detailed Description
    Claims
Fulltext Word Count: 16826

English Abstract
    The present invention implements parallel processing in a Database
Management System The present invention provides the ability to locate
transaction and recovery information at one location and eliminates the
need for read locks and two-phased commits. The present invention
provides the ability to dynamically partition row sources for parallel
processing. Parallelism is based on the ability to parallelize a row
source, the partitioning requirements of consecutive row sources and the
entire row source tree, and any specification in the structured query
language (SQL) statement. A Query Coordinator (802) assumes control of
the processing of an entire query and can execute serial row sources
(804, 806). Additional threads of control, Query Servers, execute
parallel operators. Parallel operators are called data flow operators
(DFOs). A DFO is represented as SQL statements and can be executed
concurrently by multiple processes, or query slaves. A central scheduling
mechanism, a data flow scheduler, controls a parallelized portion of an
execution plan, and can become invisible for serial execution. Table
queues are used to partition and transport rows between sets of
processes. Node linkages provide the ability to divide the plan into
independent lists that can each be executed by a set of query slaves. The
present invention maintains a bit vector that is used by a subsequent
producer to determine whether any rows need to be produced to its
consumers. The present invention uses states and a count of the slaves
that have reached these states to perform its scheduling tasks.

French Abstract
    La presente invention permet d'appliquer un procede de traitement en
parallele dans un systeme de gestion de base de donnees. L'invention
offre la possibilite d'implanter des informations relatives a une
transaction et a l'extraction de donnees dans un emplacement, et supprime
la necessite de verrouillages de lecture et d'enregistrement en deux
phases. La presente invention permet egalement d'effectuer le decoupage
dynamique de sources de lignes afin d'effectuer le traitement en
parallele. Ce parallelisme est fonde sur l'aptitude a mettre en parallele
une source de lignes, sur les besoins de decoupage de sources de lignes
consecutives et de tout l'arbre source de lignes, ainsi que sur toute
specification contenue dans l'instruction en langage d'interrogation
structure (SQL). Un element de coordination (802) d'interrogation prend
la commande du traitement de toute une interrogation et peut executer des
sources de lignes en serie (804, 806). Des files de commande
supplementaires, les serveurs d'interrogation, executent des operateurs
en paralleles. Ces operateurs en parallele sont appeles des operateurs de
flux de donnees (DFO). Un DFO est represente sous forme d'instructions
SQL et peut etre simultanement execute par des elements de traitement
multiples ou des elements d'interrogation asservis. Un moyen de
planification central ou agent de planification de flux de donnees,
commande une partie mise en parallele d'un plan d'execution, et peut
devenir invisible par rapport a l'execution en serie. Des files d'attente
de table sont utilisees pour decouper et transporter des lignes entre des
ensembles d'elements de traitement. Des liaisons entre des noeuds

permettent de diviser le plan en listes independantes qui peuvent chacune etre executees par un ensemble d'elements d'interrogation asservis. La presente invention maintient un vecteur de bits qui est utilise par un element de production de lignes suivant afin de determiner si des lignes doivent etre produites pour ses consommateurs de lignes. La presente invention comprend l'utilisation d'etats, ainsi qu'un comptage des elements asservis qui sont parvenus a de tels etats, pour effectuer ses taches de planification.

Detailed Description
... its output table queue. The slaves implementing the table scan replies to the data flow **scheduler** that they are ready. The data flow scheduler monitors the count to determine when all...

...this DFO. If it is, the data flow scheduler sends an execute to a second **slave** set to start the sort/merge join (SMJ) DFO (i.e., 324A-324C). The slaves...

...e., "n" slaves where "n" is the number of table scan and SMJ slaves), the **data flow scheduler sends** a resume to the table scan slaves. When the table scan slaves receive the resume...

...table. The data flow scheduler does not have to wait for the other table scan **slaves** to reach this **state** . The data flow scheduler determines whether any rowid ranges remain.
- 44
If there are no remaining rowid ranges, the **data flow scheduler sends** a
message to the table scan slave that sent the "partial" message that it is finished. If there are more rowid ranges, the **data flow scheduler sends** the largest remaining rowid range to the table scan slave.

When each of the table...

...all of the table scan slaves, the SMJ DFO will report to the data flow **scheduler** that all of the table scan slaves are done. Once it is determined that all of the employee table scan has been completed, the data flow **scheduler** determines the next DFO to be executed.

The next DFO, the department table scan, is...